



AIR HANDLING UNIT (AC-1) SEQUENCE OF OPERATION:

SUPPLY FAN:

THE SUPPLY FAN SHALL BE STARTED AND STOPPED THROUGH THE VFD HOA SWITCH. WHEN SWITCH IS IN THE "AUTO" POSITION, SUPPLY FAN SHALL BE STARTED AND STOPPED BY AHU DDC PANEL THROUGH EMS INTERFACE BASED UPON OPERATOR COMMAND (FAN SHALL TYPICALLY BE OPERATED CONTINUOUSLY). SUPPLY FAN SHALL BE AUTOMATICALLY STOPPED VIA THE EMS SIGNAL BY THE LOW LIMIT SWITCH, FIRE ALARM PANEL, SMOKE DETECTOR, AND HIGH STATIC SWITCH IN THE EVENT OF AN UNSAFE CONDITION. UPON ACTIVATION TO START, THE OUTSIDE AIR DAMPER AND ASSOCIATED DUCT FIRE/SMOKE DAMPERS SHALL OPEN. IF SMOKE IS DETECTED IN EITHER THE SUPPLY OF THE RETURN THE FAN SHALL STOP AND THE SUPPLY SMOKE DAMPER SHALL CLOSE. THE SUPPLY FAN VFD SPEED WILL BE CONTROLLED BASED ON A STATIC PRESSURE SENSOR LOCATED IN THE SUPPLY DUCT. THE VFD SPEED WILL BE MODULATED TO MAINTAIN THE DESIRED SET POINT (ADJUSTABLE) THROUGH THE DDC.

STATIC PRESSURE OPTIMIZATION:

THE DDC SHALL MONITOR THE DAMPER POSITION OF ALL VAV TERMINAL UNITS AND DETERMINE EACH VAV AHU'S CRITICAL ZONE VAV TERMINAL (CZ), WHICH IS THE VAV TERMINAL UNIT THAT IS THE HIGHEST PERCENTAGE OPEN. WHEN THE CZ IS LESS THAN 95% OPEN, THE SUPPLY FAN DISCHARGE STATIC PRESSURE SET POINT SHALL BE RESET DOWNWARD BY 10% OF THE PREVIOUS SET POINT AT A FREQUENCY OF 10 MINUTES UNTIL THE CZ IS MORE THAN 97% OPEN OR THE STATIC PRESSURE SET POINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM SETTING OR THE INLET VAVS (OR FREQUENCY INVERTER) ARE AT THEIR MINIMUM SETTING. WHEN THE CZ IS LESS THAN 95% OPEN AND THE SUPPLY DISCHARGE STATIC PRESSURE SET POINT IS AT THE MINIMUM SETTING, THE DISCHARGE AIR TEMPERATURE SET POINT SHALL BE RESET UPWARD IN INCREMENTS OF 0.5 F AT A FREQUENCY OF 10 MINUTES AND THE STATIC PRESSURE SET POINT HELD CONSTANT UNTIL THE CZ IS MORE THAN 97% OPEN OR THE DISCHARGE AIR TEMPERATURE IS RESET TO ITS MAXIMUM SETTING OF 10 DEG. F ABOVE DESIGN SETTING. THE REVERSE CONTROL SEQUENCING SHALL OCCUR WHEN THE CZ IS ABOVE 98% OPEN UNTIL THE DISCHARGE AIR TEMPERATURE SET POINT AND THE STATIC PRESSURE SET POINT ARE AT THEIR DESIGN SETPOINTS. THE MAXIMUM SUPPLY STATIC PRESSURE SHALL BE 1.5 INCHES W.C. (ADJUSTABLE). THE CONTROL BANDS, SET POINT INCREMENT VALUES, SET POINT DECREMENT VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED TO MAINTAIN MAXIMUM STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.

RETURN FAN:

THE RETURN FAN SHALL BE STARTED AND STOPPED THROUGH THE HOA SWITCH. WHEN SWITCH IS IN THE "AUTO" POSITION, THE RETURN FAN SPEED SHALL MODULATE TO MAINTAIN A POSITIVE RELIEF AIR DUCT STATIC PRESSURE OF 0.25" (ADJ.) RETURN FAN SHALL BE STARTED AND STOPPED BY AHU DDC PANEL THROUGH EMS INTERFACE BASED UPON OPERATOR COMMAND (FAN SHALL TYPICALLY BE OPERATED CONTINUOUSLY). WHEN THE SWITCH IS IN THE HAND POSITION, FAN SHALL BE STARTED AND STOPPED BY PUSH BUTTONS. WHEN SMOKE IS DETECTED IN EITHER THE SUPPLY OR RETURN DUCT THE RETURN FAN SHALL GO TO FULL SPEED.

RELIEF AIR DAMPER:

THE RELIEF AIR DAMPER SHALL BE MODULATED TO MAINTAIN A POSITIVE BUILDING PRESSURE OF 0.03" (ADJUSTABLE). IF SMOKE IS DETECTED IN EITHER THE SUPPLY OR RETURN DUCT THE RELIEF AIR DAMPER SHALL FULLY OPEN.

OUTSIDE AIR AND RETURN AIR ECONOMIZER DAMPERS:

THE OUTSIDE AIR DAMPER SHALL OPEN TO THE MINIMUM POSITION WHEN THE UNIT IS STARTED. (REFER TO THE AHU SCHEDULE FOR MINIMUM OSA AIRFLOWS) THE OUTSIDE AIR DAMPER AND THE RETURN AIR DAMPER SHALL BE MODULATED TO MAINTAIN THE MIXED AIR TEMPERATURE AT SETPOINT OF 50 DEG. F (ADJUSTABLE) IF SMOKE IS DETECTED IN EITHER THE SUPPLY OR THE RETURN DUCT THE RETURN SMOKE DAMPER SHALL CLOSE.

PRE-HEAT DAMPER AND CONTROL VALVE:

WHEN THE MIXED AIR TEMPERATURE IS BELOW 38 DEG. F (ADJUSTABLE), THE PRE-HEAT CONTROL VALVE SHALL FULLY OPEN AND THE BYPASS DAMPERS SHALL MODULATE TO MAINTAIN THE PRE-HEAT TEMPERATURE AT SET POINT OF 45 DEG. F (ADJUSTABLE). WHEN THE MIXED AIR TEMPERATURE IS GREATER THAN 38 DEG. F BUT LESS THAN 45 DEG. F THE BYPASS DAMPERS SHALL OPEN TO THE COIL AND THE PRE-HEAT VALVE SHALL MODULATE TO MAINTAIN THE PRE-HEAT TEMPERATURE AT SETPOINT OF 45 DEG. F (ADJUSTABLE). WHEN THE MIXED AIR TEMPERATURE IS ABOVE 45 DEG. F, THE PRE-HEAT DAMPERS SHALL OPEN TO BYPASS AND THE PRE-HEAT CONTROL VALVE SHALL BE CLOSED.

CHILLED WATER CONTROL VALVE:

THE CHILLED WATER CONTROL VALVE SHALL BE MODULATED BY DDC PANEL ANALOG OUTPUT AS REQUIRED TO MAINTAIN THE CHILLED WATER COIL LEAVING AIR TEMPERATURE AT SET POINT INDICATED ON THE EQUIPMENT SCHEDULE (ADJUSTABLE).

HUMIDIFIER STEAM CONTROL VALVE:

HUMIDIFIER STEAM CONTROL VALVE SHALL BE MODULATED AS REQUIRED TO MAINTAIN THE RETURN AIR RELATIVE HUMIDITY AT SET POINT OF 35% RH (ADJUSTABLE). VALVE CONTROL SHALL BE OVERRIDDEN AS REQUIRED TO PREVENT THE SUPPLY AIR RELATIVE HUMIDITY FROM EXCEEDING 90% RH.

<div>ADDENDUM - 1</div> <div>Revisions</div>	Approved: Medical Center Director	Seals	<div>Project Title</div> <div>Taggart Foster-Currence Gray Architects, Inc.</div> <div>4500 Burrow Drive North Little Rock, AR 72116 Phone: 501-758-7443 Fax: 501-753-7309 www.taggartarch.com</div>	<div>Drawing Title</div> <div>CONTROLS - HVAC</div>	<div>Project Title</div> <div>JLM Memorial Veteran's Hospital - Expand MICU</div>	<div>Date</div> <div>NOV 2013</div>	<div>Office of Facilities</div>	<div>DEPARTMENT OF VETERANS AFFAIRS</div>
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